

Asset Management Plan

Mercer County Sanitation District
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Introduction

The Mercer County Sanitation District was established by Mercer County Fiscal Court Ordinance No. 2005-8 in July 2005 to address the sanitary sewer needs of the citizens of Mercer County, outside of the City of Harrodsburg's Planning Area. Governed by a court appointed Board of Commissioners, the District currently serves properties located in the Bright Leaf area of Mercer County, as well as properties located on Scenic Drive, west of the City of Harrodsburg. The District operates under the guidance of an approved Regional Wastewater Facilities Plan, updated in March of 2013, which includes a 20 year vision that will have an immense positive impact on the environment of Mercer County, improving the water quality of the rivers and streams located throughout the county, including the Herrington Lake watershed and its many tributaries. The implementation of the Regional Wastewater Facilities Plan will lead to approximately 2,500 connections for the District, not including areas that might be served and are not included in the approved plan.

The Capital Assets for the District for the year ending June 30, 2013 total \$2,034,662 and is comprised of gravity sewer mains, sewer force mains, manholes, pump stations, residential grinder pump stations, flow meters and collection system maintenance equipment. Property and equipment are depreciated over the estimated useful life of the asset, utilizing the straight-line method of depreciation. Assets of the distribution system are depreciated over a 33 year life and all other equipment over lives of 5-20 years. In order to manage the District's capital assets, this Asset Management Plan includes detailed data pertaining to the operation and maintenance of the District found in the following sections:

1. Current State of Assets
2. Level of Service
3. Critical Assets
4. Minimum Life Cycle Cost
5. Long-term Funding Plan

Current State of Assets

The assets owned by the District are divided into four main categories: Collection System, Flow Meters, Pump Stations and Equipment. As a result of the infancy of the District, the majority of capital assets are relatively new, having many years of useful life remaining. However, there are assets identified by the District as being in “poor “condition, specifically the gravity sewer collection system serving the Bright Leaf Estates area, located in southern Mercer County. The initial project completed by the District included the elimination of four package plants in the Bright Leaf area and the construction of 3 pump stations, along with approximately 11,300 LF of force main. The project also included the installation of 3 residential grinder pump stations. The new infrastructure was combined with an existing gravity sewer collection system formerly owned by the homeowners association of the subdivision. Minimal maintenance had been performed in the years leading up to the transfer of ownership to the District, resulting in inflow and infiltration problems in the existing collection system. In addition to the Bright Leaf Estates gravity collection system, a new force main was constructed to convey the wastewater to the City of Harrodsburg for treatment. As noted in the list of current assets, all force main owned by the District is rated as “excellent” condition. Separate from the Bright Leaf collection system, the District provides sanitary sewer service to residents of Scenic Drive, located just outside of the western boundary of the City of Harrodsburg’s planning area. The gravity collection system was constructed in 2010 and includes approximately 2,600 LF of new 8” gravity sewer main. This system is rated as “excellent” by the District.

The next category of assets owned by the District is Flow Meters and consists of 3 permanently placed meters and one portable meter. The flow meter located at the Central Pump Station measures all flow being conveyed from the Bright Leaf area. The meter is used to monitor inflow and infiltration in the system by recording a daily flow measurement and precipitation total. In addition to flow monitoring, the meter at the Central Pump Station is utilized by the City of Harrodsburg to calculate the monthly flow total and monthly charge for treatment. The Central Pump Station Flow Meter is considered to be in good condition. The Resort Flow Meter is utilized to measure flow from the Bright Leaf Golf Resort and adjacent properties located in the vicinity of the golf course. The flow meter is utilized to calculate the

sewer charge for the Bright Leaf Resort each month. The Resort Flow Meter is considered to be in good condition by the District. The Bright Leaf North Condo Flow Meter is utilized to measure flow from 55 condominium units located in the Bright Leaf area. The flow meter readings are utilized to calculate the charge for Inflow and Infiltration from the condominium collection system which discharges to the District through the Condo Pump Station. The flow meter was installed in the fall of 2012 and is considered to be in excellent condition.

Pump Stations make up the next category of assets owned by the District. The District has three sewer pump stations within the Bright Leaf collection system; the Bright Leaf Central Station, Resort Pump Station and the Condo Pump Station. The Central Station receives all sewage flow from the area and is used to convey the sewage along the US127 South corridor to the City of Harrodsburg collection system for treatment. All three pump stations were constructed in 2009 and have been maintained based on the manufacturers recommended maintenance schedule. The pump stations are considered to be in good condition, with excess capacity to serve additional areas along the US127 South corridor.

In addition to the three large pump stations, the District owns and operates three residential grinder pump stations in the Bright Leaf area. The District has experienced malfunctions of the pump stations and repairs were necessary to restart the grinder stations. The problems are attributed to the habits of the property owners being served by the grinder pumps. The District takes a proactive approach to educate those served by the system on what is acceptable to be discharged and what is not acceptable to discharge to the system. Even though efforts are made to prevent blockages and grinder pump malfunctions, the District will still bear the cost of replacement or repair as long as the pumps are in operation. Therefore, the District must incorporate the grinder pumps into the Asset Management Plan in order to ensure continuity of service to the properties being served. The Edwards grinder pump station is considered to be in “good” condition by the District, while the Stevens and Logue grinder pump stations are considered to be in “fair” condition.

Equipment makes up the fourth category of the assets owned by the District. The equipment owned by the District was purchased through USDA, Rural Development loan and

grant funds designated as “start-up” funds as the District’s operations were initiated. The intent of the District to purchase these items was to reduce the overhead costs associated with evaluating the condition of the existing collection system in order to plan and implement the much needed rehabilitation projects that have been executed thus far. The equipment consists of a Gen-Eye brand sewer jetter utilized by the District to clean the collection system and eliminate blockages on both the public mains and private sewer laterals serving individual properties. The sewer jetter is considered by the District to be in “excellent” condition and has been maintained and serviced based on the manufacturers recommended maintenance procedures. Another essential piece of equipment owned by the District is a Cummins Portable Generator used to operate the sewer pump stations in the event of a power outage. The generator was included in the scope of the initial project that the District designed and constructed. The generator is considered to be in “excellent” condition by the District and will provide back up power for all future pump stations constructed by the District. Another essential piece of equipment owned by the District is a Gen-Eye Visual Inspection System which was also purchased with start-up funds provided by USDA, Rural Development. Due to the nature of the environment in which the camera system operates, the condition is considered as “good” by the District. The camera has proven invaluable to District Maintenance Technicians as they work to identify causes of the inflow and infiltration within the collection system.

Current Assets

<u>Asset</u>	<u>Description</u>	<u>Condition</u>
Collection System		
Gravity Sewer Main	Bright Leaf 8" 11,300 LF	Fair/Poor
Gravity Sewer Main	Scenic Drive 2,600 LF 8"	Excellent
Manholes Bright Leaf	42-4' Manholes	Fair/Poor
Manholes Scenic Drive	12-4' Manholes	Excellent
Force Main	Bright Leaf & US 127 6" 8,130 LF	Excellent
Force Main	Bright Leaf & US 127 3" 3,200 LF	Excellent

Flow Meters

Central Station	Jefferson Street 6"	Good
Resort Station	Bright Leaf Resort 3"	Good
Condo Station	Bright Leaf North Condominiums 3"	Excellent
Teledyne ISCO Meter	Portable Flow Meter	Good

Pump Stations

Central Station	(2) KSB Model KRT F 100-316/294XG 36HP	Good
Resort Station	(2) KSB Model KRT F 100-316/294XG 20HP	Good
Condo Station	(2) KSB Model KRT E 80-200/24XG 3.4 HP	Good
Edwards Grinder	Myers WGL20-21 Pump SRA-125-CV 2 HP	Good
Logue Grinder	Myers WGL20-21 Pump SRA-125-CV 2 HP	Fair
Stevens Grinder	Myers WGL20-21 Pump SRA-125-CV 2 HP	Fair

Equipment

Sewer Jetter	KNA, Inc. Gen-Eye TR-3500 Cummins Portable Generator Model 100	Excellent
Generator	DSGAA	Excellent
Sewer Camera	Gen-Eye SD GLRK0614	Good

Due to the condition of the existing collection system and immediate adverse financial impact experienced by the District, rehabilitation projects were initiated immediately to attempt to reduce the amount of extraneous flow entering the collection system during periods of heavy rainfall. To maintain the level of service desired by the MCSD Board of Commissioners and management, as well as customers being served by the District, rehabilitation to the aged infrastructure is imperative. Thus far, the District has completed two phases of rehabilitation on the Bright Leaf collection system. The original contract that included the assumption of ownership of the Bright Leaf system included the replacement of approximately 1,500 LF of 8" gravity sewer main. In an effort to continue to maintain the District's assets and desired level of service, rehabilitation projects were completed in 2010 and 2011 to replace aged and inadequate infrastructure in the Bright Leaf area. The gravity collection system has undergone two phases of rehabilitation that included the replacement and/or repair of the following:

Bright Leaf Estates Phase 1 Rehabilitation

<u>Point Repairs</u>	<u>Cost</u>
Boyle @ Jefferson 1	\$1,200
Boyle @ Jefferson 2	\$1,200
Boyle @ Jefferson 3	\$1,200
Lot 5-Mercer Ave.	\$1,200
Mayes Property	\$1,200
<u>Gravity Sewer Main Replacement</u>	<u>Cost</u>
Woodford Place (294 LF)	\$11,600
Adams Lane (850 LF)	\$34,000
Mercer Ave (22 LF)	\$880
<u>Manhole replacement</u>	<u>Cost</u>
Washington St.	\$3,800
Washington St. @ Mercer Ave.	\$3,800
Adams Lane (4)	\$14,000
Woodford Place	\$2,000
<i>Total Phase 1 Cost</i>	<i>\$76,080</i>

Bright Leaf Estates Phase 2 Rehabilitation

<u>Point Repairs</u>	<u>Cost</u>
Camic Property	Completed by LVWA Staff
Compton Property	Completed by LVWA Staff
Days Inn (Manhole Repair)	\$2,800
<u>Gravity Sewer Main Replacement</u>	<u>Cost</u>
Sell Property (40 LF)	\$4,800

<u>Manhole replacement</u>	<u>Cost</u>
Sell Property	\$3,800
Kidd Property	\$7,000
<i>Total Phase 2 Cost</i>	<i>\$18,400</i>

Level of Service

The level of service maintained by the Mercer County Sanitation District is comprised of elements that originate at the local, state and federal level. The level of service defined by the District will ensure that the financial, managerial, and technical aspects of the operations are maintained at an acceptable level. At the local level, the level of service can be defined primarily as continuity of service at the lowest possible cost to the customer. Of course, there are many aspects of operation and maintenance that must occur in order for this to be possible. One of the most critical components found at the local level is maintaining the sanitary sewer collection system. The collection system is comprised of gravity sewer mains and laterals for collection and sewer force main and pump stations for conveyance to the wastewater treatment plant.

The majority of the collection system owned by the District is aged, constructed in the 1970's by a private homeowners association. In 2005, the District assumed ownership of the existing infrastructure, after eliminating four package treatment plants and replacing them with newly constructed sewer pump stations. As a result of assuming ownership of an existing collection system that had been managed by a private association, with limited resources, the District started off with problems. Like most public sanitary sewer systems, the District experiences higher flows in times of precipitation due to the inflow and infiltration of rainwater. The District conveys all wastewater to the City of Harrodsburg for treatment. All flow, including extraneous flow due to inflow and infiltration, is invoiced at the agreed upon rate found in the executed Inter-local Agreement between the two entities. Therefore, the District pays the city to treat rainwater and those costs are not directly recovered from the District customer base. The financial impact is very detrimental to the District, therefore collection system rehabilitation is, and will continue to be a priority as the District moves forward.

Fortunately, the diameter of the gravity sewers and pump station capacities allow the District to avoid frequent sanitary sewer overflows due to higher than normal flows in times of heavy rain and allows the District to remain in "good standing" from a regulatory perspective. The District is regulated by the Kentucky Division of Water, the agency responsible for monitoring the National Pollutant Discharge Elimination System Permit currently held by the District. The level of service that must be maintained by the District at the state level includes

responsibilities such as daily flow readings, daily precipitation readings, industrial contribution percentages, and estimated population number served by the District, reported quarterly in the required Discharge Monitoring Report. This report supplies the Division of Water, as well as the United States Environmental Protection Agency, with all pertinent data related to the District's operations. The Discharge Monitoring Report, as well as information concerning sanitary sewer overflows and clean up procedures are the most important components of the level of service that must be maintained by the District at the state and federal level. The District has reported sanitary sewer overflows in a few instances during consecutive days of heavy rainfall, affecting the regulatory status of the District, consequently adversely affecting the surrounding environment in the Bright Leaf area of Mercer County. As required by the fore mentioned regulatory requirements, District maintenance personnel follow all recommended remedial measures to properly clean up the area affected by sanitary sewer overflows. The District has remained in compliance since its inception in 2009 and will continue to maintain public facilities that enable compliance to be achieved. Implementation of the Asset Management Plan will provide a road map that will guide the District in maintaining a public sanitary sewer system capable of maintaining compliance now and in the future as regulatory requirements become more stringent.

Critical Assets

The identification of all critical assets is an essential component of maintaining the assets owned by the District. The Operations Budget of the District allows only the purchase and maintenance of essential property and equipment, therefore all assets identified in the Asset Management Plan are considered critical by the Board of Commissioners and Management of the District. All assets owned by the District are considered critical to sustained performance and the day to day operations of the District. Budgeting for these items and planning for the replacement and rehabilitation is essential to maintaining an affordable rate structure for the existing customer base, as well as all future customers included in the Regional Wastewater Facilities Plan approved by the District, as well as the Kentucky Division of Water. Increasing the customer base of the District, consequently increasing the revenue for the District is critical in achieving execution of the Asset Management Plan. Contributing funds annually to an account restricted to capital improvements is also an essential component of the plan. In order to plan and execute projects that will achieve the goals and objectives of the Asset Management Plan, replacement costs and remaining useful life is included in the plan and is described in the following table:

<u>Asset</u>	<u>Condition</u>	<u>Useful Life</u> (Years)	<u>Replacement Cost</u> (Material Only)
Collection System			
Gravity Sewer Main	Fair/Poor	0	\$565,000
Gravity Sewer Main	Excellent	28	\$130,000
Manholes Bright Leaf	Fair/Poor	0	\$168,000
Manholes Scenic Drive	Excellent	28	\$48,000
Force Main	Excellent	25	\$325,200
Force Main	Excellent	25	\$64,000
Flow Meters			
Central Station	Good	10	\$18,000
Resort Station	Good	10	\$10,000
Condo Station	Good	10	\$10,000
Teledyne ISCO Flow Meter	Good	5	\$2,200
Pump Stations			
Central Station	Good	27	\$50,000
Resort Station	Good	27	\$40,000

Condo Station	Good	27	\$10,000
Edwards Grinder	Good	5	\$2,100
Logue Grinder	Fair	5	\$2,100
Stevens Grinder	Fair	5	\$2,100

Equipment

Sewer Jetter	Excellent	10	\$15,400
Generator	Excellent	10	\$60,000
Sewer Camera	Good	5	\$10,367

Minimum Life Cycle Costs

Operation and maintenance, personnel, and the capital budget account for an estimated 85% of a typical utility system's expenses. Asset management enables a system to determine the lowest cost options for providing the highest level of service over time. In 2009, the District entered into a Management Agreement with the Lake Village Water Association to operate and maintain all aspects of the District's operations, reducing the immediate overhead costs for a number of essential components of an efficient utility. Through the Management Agreement, the Association provides to the District all of the necessary administrative and maintenance needs to operate the wastewater system on a day to day basis, including all applicable licenses required by the regulatory agencies. As a result of the Management Agreement with the Lake Village Water Association, the District is able to allocate resources to the collection system, instead of allocating resources to Operation and Maintenance expenditures such office facilities, vehicle expenses, and full time employees and associated benefits. Instead, the District is able to utilize the existing expertise and resources of the Lake Village Water Association to achieve optimum system performance.

Another successful endeavor of the District was the negotiation of an Inter-local Agreement with the City of Danville for sewage treatment. The agreement was executed in February, 2013 and will allow the District to take advantage of a regional approach to wastewater treatment for the proposed Burgin Sanitary Sewer Improvements Project and areas of Herrington Lake included in the Regional Wastewater Facilities Plan. The most significant impact of this newly formed relationship will be the reduction of treatment costs, but also reduced capital construction costs associated with conveyance of sewage from the District's service area.

The District funds a Reserve Account monthly to be used for operation and maintenance purposes, such as items found in the Asset Management Plan. The costs identified by the District for replacement and repair far out way the amount of funds that could be set aside solely from sewer user fees from the current customer base of 204. Capital Improvements Projects will be funded through state and federal loan and grant funds, consequently increasing the amount of debt owed by the District. The primary concern of the District, as it relates to increased debt, is the affordability of the sewer user fee for the existing customer base. The District must

determine the positive and negative impacts that could be associated with implementing the Asset Management Plan and proceed with the most appropriate alternative. Long-term planning that includes a funding strategy that will allow the District to implement the Asset Management Plan more effectively is present in the District's operations and serves as a road map for maintaining the public sanitary sewer system.

Long-term Funding Strategy

The Long-term funding strategy for the District is composed of a handful of tasks that will ultimately lead to the execution of the Asset Management Plan. Increasing the customer base of the District is critical to sustain the operations of the District from a long-term perspective. One of the most significant components found in the Regional Wastewater Facilities Plan is the construction of the Burgin Sanitary Sewer Improvements Project, which will yield 495 new sewer customers to the existing 204 customers. The immediate increase in cash flow will allow the District to fund to Reserve and Depreciation Accounts, restricting funds for capital improvements in order to maintain the level of service defined by the District. The construction of the Burgin Sanitary Sewer Improvements Project also serves as a “stepping stone” to provide service to the Herrington Lake area of eastern Mercer County. Providing service to the Herrington Lake area will increase the customer base by approximately 1,300 customers, increasing the total number of customers to approximately 2,000. The Regional Wastewater Facilities Plan includes projects to serve another 500 households throughout the county, resulting in approximately 2,500 sanitary sewer customers outside of the City of Harrodsburg’s Planning Area.

Another significant component included in the long-term funding strategy for the District include applications to various funding agencies such as USDA, Rural Development, the Kentucky Infrastructure Authority, the Clean Water State Revolving Fund Program, the Community Development Block Grant Program and the Kentucky General Assembly. These agencies have shown immense support for the District and continue to contribute to the success of the District in their endeavors. The United States Environmental Protection Agency recommends the following funding strategies when determining how to implement the Asset Management Plan:

- Revising the rate structure
- Funding a dedicated reserve from current revenues
- Financing asset rehabilitation, repair, and replacement through borrowing or other financial assistance.

Based on the recommendations made by the U.S. EPA, the District is on the right track in the pursuit to execute the Asset Management Plan. Implementing the practices recommended by the U.S. EPA along with a steady increase in the customer base will provide the revenue and cash flow necessary to maintain the public sanitary sewer system, consequently sustaining the level of service defined by the MCSD Board of Commissioners and Management, as well as customers and regulatory agencies alike.